

Field Work and Sampling Update: Soil, Sediment, Water, and Biota

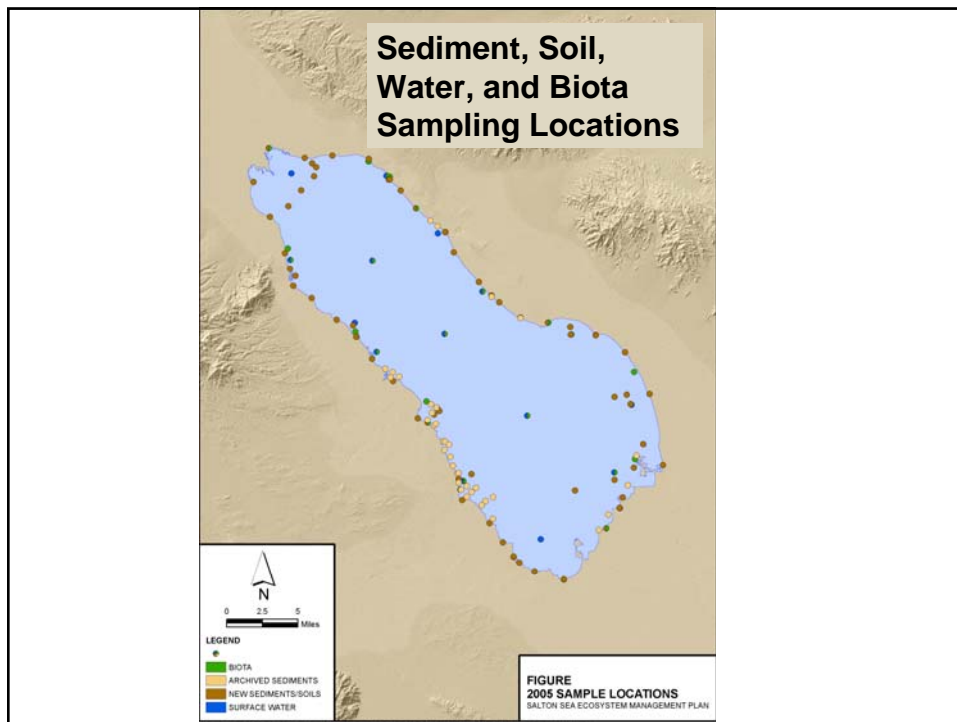


Advisory Committee
August 17, 2005

Sampling and Field Work Efforts

◆ **Sediment, soil, water, and biota sampling**

- Conducted sampling to complete identified data gaps
- Also analyzed more archived samples from sediment transects
- Evaluation of results currently being completed



Data Gap: Spatial Characterization of Selenium in Salton Sea Sediment

◆ Input to Project/Need

- Characterization of near-shore sediments
- Prediction of conditions in exposed sediment or other changes under various alternatives

◆ Actions Taken

- Analyzed archived sediment samples
- Sampled shallow sediments and surface soils around the Salton Sea (metals, semi-volatile organic compounds, PCBs, organochlorine pesticides, total organic carbon, and grain size; over 60 samples)

Data Gap: Spatial Characterization of Selenium in Salton Sea Sediment - continued

◆ Initial Results

- Total selenium ranged from below detection limit to 7.6 mg/kg (dry weight) in archived samples
- New near-shore sediment samples ranged from below detection limit to 6.3 mg/kg (dry weight), as total selenium
- New sediment core samples in deeper water ranged from 3.8 to 11 mg/kg (dry weight), as total selenium
- Lake-edge soils ranged from below detection limit to 2.6 mg/kg (dry weight), as total selenium

Data Gap: Further Characterization of Selenium in Salton Sea Biota

◆ Input to Project/Need

- Selenium concentrations in water and Salton Sea biota/food web
- Identify ecological risk

◆ Actions Taken

- Selenium in surface water, including selenium speciation (15 sites)
- Food-chain biota in shallow and deep areas including macroalgae, plankton, amphipods, pileworms, water boatmen, and whole-body fish samples for Eco Risk Assessment (total selenium for 16 tilapia and 1 sailfin molly composite samples) (7 sites)

Data Gap: Further Characterization of Selenium in Salton Sea Biota - continued

◆ Actions Taken - continued

- Human health risk assessment for fish fillet consumption (selenium, arsenic, mercury, cadmium, inorganic arsenic, PCB congeners, and organochlorine pesticides for 11 tilapia samples)
- Lower Colorado River for comparison to Salton Sea fish and to historic levels (selenium and arsenic in tilapia, largemouth bass, and channel catfish) (3 sites)

Data Gap: Further Characterization of Selenium in Salton Sea Biota -cont.

◆ Initial Results

- Salton Sea selenium concentrations
 - 0.62 to 1.4 ug/L as total selenium in water
 - More than half was dissolved organic selenium
- Salton Sea invertebrates
 - Below detection limit to 6.2 mg/kg (dry weight), as total selenium
- Salton Sea whole fish
 - 4.9 to 14 mg/kg (dry weight), as total selenium
- Salton Sea fillets (OEHHA Protocol)
 - 1.1 to 2.6 mg/kg (wet weight) total selenium
 - (OEHHA benchmark is 2 mg/kg (wet weight))
- Colorado River whole fish
 - 2.5 to 9.5 mg/kg (dry weight), as total selenium

Data Gap: Selenium Release and Bioavailability in Salton Sea Sediments

◆ **Input to Project/Need**

- Understanding effects of changed water quality on bioavailability of selenium in Salton Sea sediments

◆ **Actions Taken**

- Intact sediment cores
 - To predict selenium release from sediments under three levels of salinity (2 marine and 1 freshwater); includes selenium speciation for overlying water
 - Also tests effects of eutrophication by using different oxygen concentrations
- Bioaccumulation tests
 - To evaluate uptake of selenium from sediment to pileworm surrogate and freshwater species under three levels of salinity (2 marine and 1 freshwater)
- Analyses are ongoing